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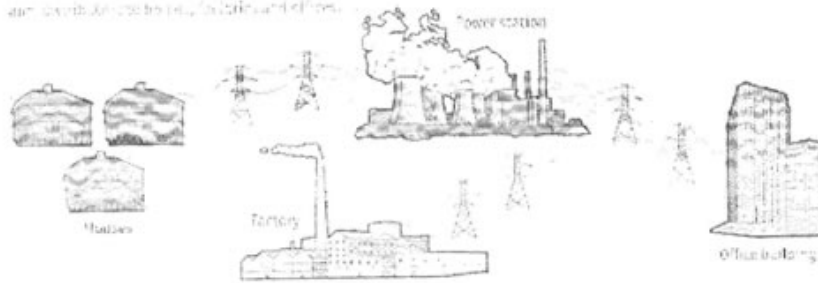
Clark Communications, LLC focuses on "civic markets" or how business and public policy can work together to achieve, leverage and promote the same societal end results, especially in the commercialization of advanced technologies, corporate governance, finance and international markets such as those in the energy, environmental and climate change sectors. He had developed this idea through his teaching in Europe and Asia. Clark was an editor and author in the international science and technology issues as well as the finance of renewable energy focused on climate change through the UN Intergovernmental Panel and Framework Convention for Climate Change. He can be reached at Clark Communications, LLC, PO Box#17975, Beverly Hill, California USA 90209 or at mobile # +1 (310) 666-3937, fax # +1 (310) 858-6881 or via email wclark13@aol.com

Appendix A: Energy Internet The Economist (11 May 04)

The shape of grids to come?

Conventional electrical grid

Centralised power stations generate electricity and distribute it to homes, factories and offices.

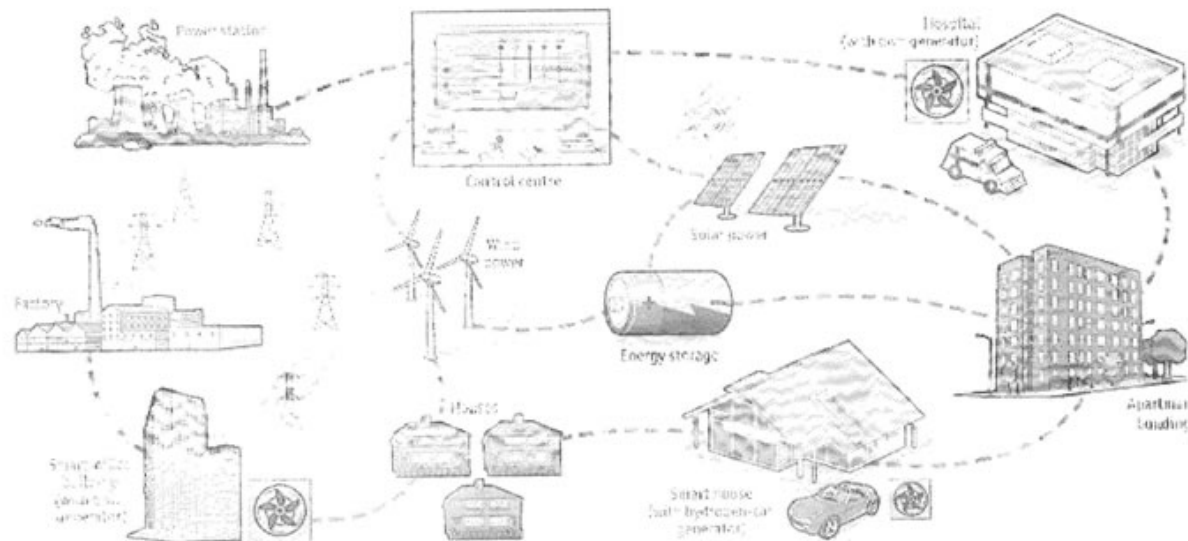


Energy internet

Many small generating facilities, including those based on alternative energy sources such as wind and solar power, are orchestrated joined together in a decentralised and control systems.

Instead of households generating their own power and selling it back to the grid, hydrogen-powered vehicles can act as generators when not in motion, storage can be used to make it available for use when it is not being used, and solar power.

Distributing power generation in this way reduces transmission losses, operating costs and the environmental impact of overhead power lines.



Source: The Economist, 2004

Appendix B State of California, Governor's Office of Research and Planning: Comprehensive Renewable Energy Investment Plan (2002)

Strategies for a Comprehensive California **Renewable Energy** **Investment Plan**

Prepared by the Interagency Green Accounting Working Group

October 2002



Gray Davis, Governor

Part I: Comprehensive Project Management Finance
Part II: A 15-year Renewable Energy Investment Policy
Plan for California

Governor's Vision Statement

Secure California's energy independence, and provide secure, affordable energy through the development of a generation and delivery system that is the cleanest, most efficient, and reliable in the world by maximizing use of renewable energy, thereby making a positive contribution towards reducing global climate change.

Goals

Improved Planning

- (1) Create and implement a comprehensive statewide energy infrastructure policy that embraces the use of renewable energy as a vital concept in meeting California's future needs for reliable, affordable energy while having favorable environmental impacts. Plan for raising the contribution of renewable power in California's grid from current levels to 20% by the year 2017, and to 25% by the year 2020.
- (2) Integrate renewable energy and energy efficiency into distributed generation projects.

Improved Regulation

- (1) Provide timely and consistent regulations and incentives to integrate on-site renewable energy generation with central grid generation and transmission facilities.

Financing and Fiscal Policy

- (1) Accelerate demand for renewable energy.
- (2) Define a market-based instrument for all energy generation (carbon market) so that the price of the resulting energy reflects the direct cost of producing that energy and the costs of reducing or eliminating the harm that generation does to the environment and human health.

Create, and maintain over time, a financial climate that encourages renewable energy.

Appendix C: Governor Schwarzenegger's Sustainable Building Ex Order
(December 15, 2004)

EXECUTIVE ORDER S-20-04

by the
Governor of the State of California

WHEREAS, the Energy Action Plan adopted by the state's energy agencies places conservation and energy efficiency first in the loading order of energy resources because they are the least expensive and most environmentally protective resources; and

WHEREAS, commercial buildings use 36 percent of the state's electricity and account for a large percentage of greenhouse gas emissions, raw materials use and waste; and

WHEREAS, the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED), the nation's leading green building rating system, promotes "high performance" building practices; energy, water and materials conservation; environmentally preferred products and practices; improvements in employee health, comfort and productivity; and reductions in facility operation costs and environmental impacts; and

WHEREAS, electricity costs for California's commercial and institutional buildings exceed \$12 billion per year, and cost-effective efficiency practices outlined in this Order can save more than \$2 billion per year; and

WHEREAS, the state's own buildings consume over \$500 million of electricity per year, and the measures outlined in this Order can save California taxpayers \$100 million per year; and

WHEREAS, high-performance schools also reduce energy and resource consumption, while creating safer and healthier learning environments; and

WHEREAS, investments in energy efficiency measures provide high returns on investment and boost California's economy, creating more jobs, local spending and tax revenue.

NOW, THEREFORE, I, ARNOLD SCHWARZENEGGER, Governor of the State of California, by virtue of the power vested in me by the Constitution and statutes of the State of California, do hereby order effective immediately:

1. That the state commit to aggressive action to reduce state building electricity usage by retrofitting, building and operating the most energy and resource efficient buildings by taking all cost-effective measures described in the Green

Building Action Plan for facilities owned, funded or leased by the state and to encourage cities, counties and schools to do the same.

2. That state agencies, departments, and other entities under the direct executive authority of the Governor cooperate in taking measures to reduce grid-based energy purchases for state-owned buildings by 20% by 2015, through cost-effective efficiency measures and distributed generation technologies; these measures should include but not be limited to:
 - 2.1. Designing, constructing and operating all new and renovated state-owned facilities paid for with state funds as "LEED Silver" or higher certified buildings; and
 - 2.2. Identifying the most appropriate financing and project delivery mechanisms to achieve these goals; and
 - 2.3. Seeking out office space leases in buildings with a U.S. EPA Energy Star rating; and
 - 2.4. Purchasing or operating Energy Star electrical equipment whenever cost-effective.
3. The Division of the State Architect in the Department of General Services should adopt guidelines by December 31, 2005, to enable and encourage schools built with state funds to be resource and energy efficient.
4. That the California Public Utilities Commission (CPUC) is urged to apply its energy efficiency authority to support a campaign to inform building owners and operators about the compelling economic benefits of energy efficiency measures; improve commercial building efficiency programs to help achieve the 20% goal; and submit a biennial report to the Governor commencing in September 2005, on progress toward meeting these goals.
5. That the California Energy Commission (CEC) propose by July 2005, a benchmarking methodology and building commissioning guidelines to increase energy efficiency in government and private commercial buildings.
6. That the CEC undertake all actions within its authority to increase efficiency by 20% by 2015, compared to Titles 20 and 24 non-residential standards adopted in 2003; collaborate with the building and construction industry state licensing boards to ensure building and contractor compliance; and promptly submit its report as per Assembly Bill 549 (Statutes of 2001) on strategies for greater energy and peak demand savings in existing buildings.
7. Other entities of state government not under the Governor's direct executive authority, including the University of California, California State University,

California Community Colleges, constitutional officers, legislative and judicial branches, and CPUC, are requested to actively participate in this effort.

8. Nothing in this Order shall be construed to confer upon any state agency decision-making authority over substantive matters within another agency's jurisdiction, including any informational and public hearing requirements needed to make regulatory and permitting decisions.
9. Commercial building owners are also encouraged to take aggressive action to reduce electricity usage by retrofitting, building and operating the most energy and resource efficient buildings by taking measures described in the **Green Building Action Plan**.
10. This Order is not intended to, and does not create any rights or benefits, substantive or procedural, enforceable at law or in equity, against the State of California, its departments, agencies, or other entities, its officers or employees, or any other person.
11. That as soon as hereafter possible, this Order shall be filed with the Office of the Secretary of State and that widespread publicity and notice shall be given to this Order.

IN WITNESS WHEREOF I have here unto set my hand and caused the Great Seal of the State of California to be affixed this the fourteenth day of December 2004

[illegible]

For Further details see:

<http://www.governor.ca.gov/state/govsite/gov_homepage.jsp> and click on the first update on the screen.

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Thank you for providing the article.

Exhibit 3

G437-285

Forget About Liquefied Natural Gas: We Need Diverse Clean Energy Now

Crisis breed innovative opportunities. The Chinese even have one word for both. Still, as the summer of 2004 drew to a close, America in general and California in particular, continued to have an energy crisis. To do nothing, or have our heads in Middle Eastern sand, because we believe that "market forces" will meet the demands has now been proven folly. What we do have in America and the world today in

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terms of challenges and opportunities is a major "paradigm shift"—the change from fossil fuels to clean, renewable fuels. And clean hydrogen is the key.

Public and private plans, programs and mechanisms are needed now. No doubt about it. But choice, and hence diversity in energy supplies, are the critical factors to an environmentally sound future with reliable, clean energy. Basic economics argues that any source of supply must be diversified and subject to civic markets.¹ Many well-intentioned proponents, however, propose that the energy shortages of today will be met with "near-term" solutions such as liquefied natural gas (LNG).

Unfortunately, the public policy proponents often do not have all the data or are not fully informed. Instead, they only have access to or knowledge of selected materials provided to them by biased sources. As we shall see below, the option of LNG is not only near-term, but also overly expensive and needlessly prolongs the paradigm shift to clean, renewable energy fuel sources, let alone California's hydrogen economy² and the more immediate concern for advanced technologies, notably fuel cells, that link

stationary and transportation infrastructures.³

Having served recently in California's state government, it is easy for me to understand how current state officials are disinformed due to lack of in-depth historical sources and biased analytical data. As a result, energy bureaucrats in the state administration have put forth many ill-informed and simply wrong assertions about California's energy situation, based on fundamentally flawed hypotheses that run counter to mandated public policy. The most oft-quoted document is the California Energy Commission's (CEC) "Integrated Energy Policy Report,"⁴ issued on its legally required due date of December 2003. Unfortunately, the debate and discussion over this report came in the middle of California's historic recall election during the summer and fall of 2003. Based on flawed logic and narrow data analysis, the report erroneously recommends in its Executive Summary, among other things:

- Ensure that existing and new natural gas storage capacity have priority for meeting peak demand in the electricity and natural gas systems.

- Coordinate permit reviews with all entities to develop an LNG terminal on the West Coast.

While the Energy Report also calls for advancing the renewable portfolio standard to 20 percent by 2010, it does not offer any financial incentives or government programs to do so. On the other hand, the LNG industry is prepared to spend and invest billions in building LNG facilities along the California (or even the Mexican) coastlines. By the summer of 2004, two international corporations had proposed and were on a fast track pathway to approval for LNG facilities.⁵

Aside from the matter of the facilities, a fundamental question remains: Where is the LNG supplied? What are the sources of supply in terms of geopolitical concerns and environmental impact? Most proponents point to Australia, Norway, and South America—safe LNG suppliers, goes the argument. However, rarely do they add Indonesia, Siberia, Venezuela, and the Middle East, on the other. Since there is not enough LNG supply to satisfy the increased worldwide demand, the U.S., and California in particular, will be forced to depend upon suppliers in volatile, unsafe, and potentially conflicted regions of the world. That's without even considering the environmental degradation that LNG exploration and drilling causes. Arguing for domestic U.S. supplies violates basic environmental reasoning.

The argument, moreover, that natural gas prices are rising and supplies uncertain is equally

questionable. As an investigative study by the Federal Energy Regulatory Commission of the February 2003 "price spikes" issued in July 2003 proved, natural gas supply spikes⁶ are most often due to "short-term conditions leading to low supply and high demand" (p. 15). Or what some economists have called "the perfect energy storm." The past and current Governor's Office Natural Gas Task Force (now part of the CEC)

Of course, we Californians know about "price spikes," because of our struggles with market manipulation during the California energy crisis.

tracked natural gas prices since the crisis in the winter of 2001 and consistently came to the same conclusions.⁷ The pattern of price manipulation that was documented and tracked during the California energy crisis from the spring of 2000 to the summer of 2001 can be seen with natural gas.

Of course, we Californians know about "price spikes," because of our struggles with market manipulation during the California energy crisis. However, to claim that more natural gas, especially in the form of LNG, is needed in the state due to continuing higher market gas prices is false. Certainly, if LNG facilities are built,

hence temporally increasing supplies until they run out in 20–25 years,⁸ that may become the case. But it is not the situation now. Natural gas prices are stable if civic markets provide oversight.

The bases of the CEC 2003 Integrated Energy Report (and other reports) however rests upon the past reviews of the energy situation and natural gas supply in California. Again, as these studies fail to consider broader and far more inclusive policy issues, so do those advocating LNG. Moreover these studies rely heavily upon other studies of the same ilk by the CEC, such as the Natural Gas Task Force and its LNG Working Group reports produced monthly since the spring of 2001. This CEC report was issued in July 2003 with reliance upon these same sources of data (usually generated by outside consultants). Nonetheless, the inherent dangers in this and other studies are admitted in the following report disclaimer:

... does not discuss the front end of the LNG supply chain (i.e. the exploration, production and liquefaction of gas from distant and isolated locations), LNG economics, or the features and permitting of small LNG facilities for vehicle fueling or peak-shaving purposes ... (and in addition) the regulation of LNG facility operations, gas pipeline construction and operation, gas quality, or gas prices... (p. 2)

Each of these disclaimed points is a major issue: (1) International conflict, (2) national security, (3) environmental, and (4) hazardous issues are all critical and independent by themselves. Community advocacy groups, multinational

corporations, and the CEC all have well-paid consultants, researchers, and lobbyists. These issues may be resolved also in the American presidential election, but past presidential history makes one wonder: Bureaucracies live beyond the changes in political office. Meanwhile, the LNG industry hopes to "educate" and "inform" (i.e. convert) the environmental and larger community to its point of view. It would not be surprising to discover some environmental organizations receiving LNG industry "donations." Nonetheless, the costs for any LNG facility (on-shore or off-) are estimated by the industry itself to run in the billions. As noted above, private sector proponents and public sector oversight do not include other costs. Why? The reasons are significant.

First the further dependence on fossil fuels such as LNG is not discussed. Do not be fooled. LNG is a fossil fuel, no matter how "clean" it might be positioned in its marketing. And LNG will never be clean in the way that renewable energy sources are clean. California is already far too dependent on natural gas to engage in further fossil fuel dependency. As increasingly more research studies show⁹ – and as articles such as The Economist's "Beginning the Energy Internet"¹⁰ have begun to suggest – the near-future configuration of the energy grid will be far less centralized and far more dispersed. In short, any nation-state, such as California, will have local lower-cost green energy from its renewable resources rather than remaining dependent upon transi-

tion lines and long-haul transport systems.

Second, the key to California's energy independence as observed by past Gov. Davis and advocated by current Gov. Schwarzenegger is to focus on the state's infrastructure and its "diversity" of fuel supplies¹¹ (9). Renewable energy supply has been aggressively supported by both governors through executive orders and renewable energy laws. Every other elected

Perhaps most disturbing are the stranded costs for liquefied natural gas.

state official and many local communities, including now the largest pension funds in the world, CalPERS and STRS, also argue the case for California's energy independence through environmentally sound technologies and renewable energy generation. Gov. Davis' Office of Planning and Research issued a report on "Strategies for a Comprehensive California Renewable Energy Investment Plan," from its Interagency Green Accounting Working Group, in October 2002,¹² which documented how strategic cost-effective investments in renewable energy today would more than make up for future energy shortages in the state.

Third, the LNG facilities costs are staggering. If the industry with state approval and sanction condones such energy facility costs, then why not direct similar investments to renewable energy generation—both grid and off-grid? The fact is that renewable energy today is on an even faster cost-reduction trajectory than natural gas was 30 years ago. Back then, the costs for natural gas production, transportation, and power generation were high. Renewable energy costs are significantly lower today and coming down even faster (e.g. wind is now on a par, for example, with natural gas),¹³ and do not depend upon fossil fuel exploration.

Fourth, and perhaps the most disturbing, are the stranded costs for LNG. If, as the argument goes, natural gas supplies are limited today, and hence subject to higher price spikes, then it is easy to see a near-term Economics 101 scenario whereby there will be an oversupply in the short term, leading to either the abandonment or bankruptcy of these environmentally dangerous facilities. Environmental justice and health issues along with the dangers to local communities¹⁴ will make LNG facilities a permanent problem, be they on- or off-shore. In the end, industry will turn to government and taxpayers to bail them out or finance their power supply contracts. We have certainly seen that before in recent history.

Finally, the argument that LNG and natural gas is a "transition" to the California Hydrogen Highway may be correct in a narrow way.

But the issue is to define the length of time for this transition.¹⁵ President Bush, some academic researchers, and misinformed environmentalists believe a hydrogen economy is 20–30 years away. Not true. The transition period is, at most, only five to seven years. Hence, why invest billions in LNG when it is a short-term transitional fuel source?

Just five to seven years? That's the view of the European Union, Japan, major carmakers, international power companies, and regional and local governments.¹⁶ In other words, the time cycles for the next generation of hydrogen fuel-cell-powered vehicles, after the current hybrids, are close at hand. This is not fantasy or corporate market hype. Consider the hybrids on the road today at reasonable costs and sold out for months in advance. Not more than four years ago, some companies brought demonstration hybrid models into the marketplace. Today, go to Los Angeles or San Francisco and see hydrogen fuel cell cars in use by local city governments. Looks like the paradigm change is occurring now. ■

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The LNG industry hopes to "educate" and "inform" (i.e. convert) the environmental and larger community to its point of view.

G437-286

Thank you for providing the article.

Exhibit 4

G437-286

**NATURAL GAS PRICE EFFECTS OF
ENERGY EFFICIENCY AND
RENEWABLE ENERGY PRACTICES
AND POLICIES**

**R. Neal Elliott, Ph.D., P.E., Anna Monis Shipley,
Steven Nadel, and Elizabeth Brown**

December 2003

Report Number E032

**©American Council for an Energy-Efficient Economy
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About the American Council for an Energy-Efficient Economy (ACEEE)

ACEEE is a nonprofit organization dedicated to advancing energy efficiency as a means of promoting both economic prosperity and environmental protection. For more information, see <http://www.aceee.org>. ACEEE fulfills its mission by:

- Conducting in-depth technical and policy assessments
- Advising policymakers and program managers
- Working collaboratively with businesses, public interest groups, and other organizations
- Organizing conferences and workshops
- Publishing books, conference proceedings, and reports
- Educating consumers and businesses

Projects are carried out by staff and selected energy efficiency experts from universities, national laboratories, and the private sector. Collaboration is key to ACEEE's success. We collaborate on projects and initiatives with dozens of organizations including federal and state agencies, utilities, research institutions, businesses, and public interest groups.

ACEEE is not a membership organization. Support for our work comes from a broad range of foundations, governmental organizations, research institutes, utilities, and corporations.

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Glossary of Terms*Energy and Power Units*

British thermal unit (Btu): basic unit of energy

Million Btu (MMBtu)

Quad = quadrillion Btu = 1,000,000,000,000,000 Btu

Therm = 100,000 Btu

Decatherm = 10 Therms = 1 MMBtu

Watt (W): basic unit of power

Kilowatt (kW) = 1,000 Watts

Megawatt (MW) = 1 million Watts

Kilowatt-hour (kWh) = 3,412 Btu

Megawatt-hour (MWh) = 1,000 kWh

Natural Gas Units

Cubic foot (cf): basic unit of natural gas delivery = ~1030 Btu

Thousand cubic feet (Mcf) = ~ million Btu

Million cubic feet (MMcf) = ~ billion Btu

Billion cubic feet (Bcf) = ~ trillion Btu

Trillion cubic foot (Tcf) = ~Quad

Market Terms

Distributed generation: electric power generation located at or near the point of use.

Renewable generation: electric power generation from a renewable energy source such as wind, solar, sustainably harvested biomass, or geothermal.

Demand destruction: reduction in industrial plant operation or plant closures that result in reductions in energy demand.